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Dispute Resolution and Self-Selection : An Empirical Examination of the Federal Public Sector, 1971-1982

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Résumé de l'article

Depuis 1967, les syndicats de la fonction publique fédérale canadienne ont pu choisir unilatéralement le mécanisme par lequel l'impasse dans la négociation allait se résoudre. Dans cet article, le choix de recourir à la grève ou à l'arbitrage pour mettre fin au conflit repose à la fois sur la détermination salariale pour les services gouvernementaux fédéraux et sur la méthodologie des choix autonomes. Ce modèle permet l'étude des facteurs influençant la préférence pour l'un ou l'autre des deux modes de résolution ainsi que l'impact de celui-ci sur les augmentations de salaires.

La première partie du modèle porte sur la probabilité pour la partie syndicale d'opter pour la grève. Les auteurs avancent comme théorie que plus l'écart entre les augmentations salariales anticipées par un arrêt de travail et celles anticipées par l'arbitrage est important, plus la probabilité que le syndicat opte pour la grève sera élevée. Les autres facteurs pris en compte sont la proportion de travailleurs essentiels dans l'unité d'accréditation (ceux ne pouvant participer légalement à un arrêt de travail), l'environnement politique ainsi que les préférences quant aux moyens de pression.

Deux équations de détermination salariale, l'une pour la grève et l'autre pour l'arbitrage, ont été dès lors développées. Comme pour d'autres recherches, les augmentations salariales sont présumées être reliées directement à l'inflation anticipée, au rattrapage de l'inflation non anticipée ainsi qu'à l'offre et à la demande de travail. D'autres variables ont été ajoutées pour mesurer l'influence des aspects politiques du processus de négociation et ceux rattachés à chacune des deux options.

Les équations salariales ne peuvent reposer sur de simples Khi carrés de par la présence du biais des choix autonomes. Pour y remédier, plus de 300 conventions collectives signées entre 1971 et 1982 ont toutes été analysées avec la technique développée par Heckman et Lee. Une fois les équations calculées, il est possible de prédire l'augmentation salariale que chaque syndicat aurait reçue advenant qu'il ait opté plutôt pour l'autre option. D'une perspective syndicale, les résultats démontrent que la voie de la grève est meilleure. Indépendamment du mode choisi, l'augmentation salariale moyenne prédite par une grève surpasse celle prédite par l'arbitrage de 3 %.

Des évaluations faites pour l'équation de grève à partir de l'équation structurelle, il ressort que pour chaque point de pourcentage d'augmentation des salaires gagné par l'option de la grève, la probabilité que ce mode soit préféré à l'arbitrage augmente de 0,176.

Étant donné la préférence marquée pour la grève et l'importance de la question salariale dans le choix d'un mécanisme de règlement, il n'est pas surprenant de constater que, depuis 1983, les syndicats aient laissé de côté l'arbitrage. Seulement 14 unités d'accréditation comptant 15 000 employés (8 % du total) avaient opté pour l'arbitrage en date du mois de mars 1990.

Dispute Resolution and Self-Selection
An Empirical Examination of the Federal Public Sector, 1971-1982

Gene Swimmer
and
Stanley L. Winer

Unions in the Canadian federal public service have been able to unilaterally select whether any impasse in the upcoming negotiations would be resolved by a strike or arbitration. In this paper, the union's dispute resolution choice is modelled simultaneously with wage determination in the federal public service, using the self selection methodology.

In 1967 the Government of Canada legislated an innovative mechanism for resolving collective bargaining disputes in the federal public service.[1] Under this legislation, the bargaining agent involved chooses unilaterally whether any impasse in forthcoming negotiations would be resolved by a strike or by arbitration. The dispute resolution choice has been the subject of much controversy, with the debate generally focusing on two related issues. First is the question of what factors have influenced the choice of bargaining route and, in particular, the trend away from arbitration?[2] Anderson (1981:70)

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1 The Heeney Committee, which was set up by the Pearson Government to bring collective bargaining to the Federal Public Service, recommended that impasses be resolved by arbitration. Within weeks of the report, the postal workers went out on an illegal, but popular, strike. The resulting dispute resolution process was a way out of this political problem. See H. Arthurs (1971).

2 In 1970, 88 percent of the bargaining units chose arbitration. By 1990, 82 percent of bargaining units negotiated under the strike route (Public Service Staff Relations Board 1971, 1990).

and Barnes and Kelly (1975:51-4) argue that unions perceive the federal arbitration system as unfair and needlessly conservative, particularly with respect to non-monetary issues. Swimmer (1987a:58) claims unions learn from experience that even without resort to an actual strike, bargaining under the strike route leads to higher wage settlements. The second issue concerns the impact of the new dispute resolution system on wages. Saunders (1980:6) argues that strong unions could use the strike route to get high wage settlements while weak unions could rely on arbitrators to achieve wage parity with the more militant groups, making the new system of collective bargaining inflationary.

In this paper, the union's choice between strike and arbitration route is modelled simultaneously with wage determination in the federal public service using the standard self-selection methodology. The model permits exploration of the factors influencing the choice of bargaining route as well as the effect of this choice on wages.

After a brief description in the next section of the collective bargaining framework in the federal public service, we present the model and estimating equations in the third section. Results and concluding remarks follow.

THE INSTITUTIONAL FRAMEWORK

According to the *Public Service Staff Relations Act*, which governs bargaining in the federal public sector, the union representing employees in a specific bargaining unit[3] notifies Treasury Board (the employer), prior to negotiations, whether impasses will be resolved by arbitration or the strike route. If a union opts for the right to strike, a number of steps must be completed before that right can be exercised.

The Act requires that employees who are essential to the "safety and security of the public" be identified. These "designated" employees must continue working in the event of a strike by their fellow members. Treasury Board draws up an initial list and, if the union disagrees, the designations are resolved by the Public Service Staff Relations Board (PSSRB), the quasi-judicial body which administers the Act. Contract negotiations continue concurrently, but a conciliation board under the strike route cannot be convened until the designation process is complete.

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3 Bargaining units were established along occupational lines. As of 1990, there were 78 units bargaining with Treasury Board as the employer. The PSSRA also oversees collective bargaining between unions and "separate employers" (i.e., National Film Board, National Research Council), but these cases are not included in any of the analysis. (Public Service Staff Relations Board 1990:61-83)

An *ad hoc* conciliation board is composed of a union representative, an employer representative and a neutral chairperson. After holding hearings into the dispute it issues a non-binding report containing recommendations for settlement. A week after the report becomes public, the union can commence a legal strike of non-designated employees.[4] The employer cannot lock out employees.

When a union opts for arbitration, negotiations proceed until a settlement or an impasse is reached. Upon impasse, the PSSRB selects an arbitration tribunal from a permanent roster with only indirect involvement from the union or employer. The award rendered by this tribunal is binding on the parties. These awards tend to focus narrowly on wages and benefits and rarely include any justification.[5]

It is worth noting that between January 1970 and June 1982 (the beginning of the "6 and 5" wage restraint program) the average annualized wage increase negotiated under the strike route was 10.2 percent, 1.3 percentage points higher than the average for arbitration (8.9 percent). This difference in wage increases is not necessarily indicative of the impact of route choice on wages, however, because of the likelihood of self-selection. For example, it is possible that a particular union currently using arbitration would be worse off, had it chosen the strike route, because it would be unable to successfully threaten or conduct a strike. The model which is set out in the next section allows us to estimate the difference in wages for each bargaining unit, with its specific attributes, between what was actually obtained by the group in the negotiations and what could have been obtained had that union followed the route which it did not choose.

THE MODEL

The model consists of three equations: one for the choice of bargaining route and a separate equation for wage determination under each of the two bargaining options.

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4 Swimmer (1987a) contends that public opinion makes it more difficult for the government to reject a report which favours the union, than *vice versa*. Therefore, the strike route provides unions with the advantage of conciliation board reports which represent one-way arbitration (binding for the employer but not the union).

5 Anderson (1981) has argued that many unions perceive the process as unfair and therefore have switched to the strike route.

Choice of Route Equations

The choice of route for each bargaining unit is assumed to be given by the probit model:

$$I_i^* = x'_i \beta + e_i \qquad i = 1,2,.....N$$

$$I = 1 \text{ (strike) if } I_i^* > O \qquad (1)$$

$$I = O \text{ (arbitration) otherwise.}$$

In equation (1), I_i^* is an unobservable index, depending on exogenous variables x_i and parameters β, and the probability that $I_i = 1$ is given by

$$P(I = 1) = P(e_i > -x'_i \beta) = 1 - F(-x'_i \beta) \qquad (1a)$$

where F is the cumulative normal density function.

The explanatory variables for each bargaining unit, x_i, consist of: $(\dot{W}_s - \dot{W}_a)$ or the annualized percentage wage increase under the strike route minus the annualized percentage wage increase under the arbitration route; a vector of strike power variables; and a vector of strike taste variables.

We expect that as the wage differential $(\dot{W}_s - \dot{W}_a)$ between the strike and arbitration routes increases, the probability of selecting the strike route increases. In addition, we presume that unions with the power or inclination to mobilize an effective strike will be more likely to select the strike route.

An important factor determining a union's power in a legal strike is the proportion of bargaining unit members designated as essential. The relationship between designations and union power is not straightforward. Bargaining units with few designated employees can all go on strike, but such a strike would generate little public outcry, since essential services are not being curtailed. At the other extreme, groups with most workers designated are undoubtedly powerful, but cannot legally exercise that power because most members must continue to work during a strike. Thus, there appears to be a nonlinear relationship between the proportion designated and strike power. To complicate matters further, groups currently using the arbitration route are not designated, so unions contemplating a switch from arbitration to the strike route must base their decision in part on an expectation about designations.

It should be possible for a union, based on past decisions for similar groups, to judge whether they would fall into a low, medium or high designation category. We presume that unions expecting low or high rates of designations will be less likely to opt for the strike route than those expecting a medium designation rate for the reason explained above. For empirical purposes, a pair of dichotomous variables representing low (less than one-third designated) and high (more than two-thirds) designation categories, DL and

DH respectively are defined, the medium category serving as the (most powerful) reference group.[6]

Regardless of the inherent essentiality of a given employee group, the political environment may affect the union's choice of the strike route. The political cost of taking a strike may be lower to a right-of-centre government than a left-of-centre one. In addition, minority governments should be more concerned about the political ramifications of a strike and therefore less inclined to intervene. This should make the strike route more attractive to unions. Dichotomous variables are defined for the Conservative minority (CMN) and Liberal majority (LMJ) governments (Liberal minority is the reference group). We expect unions to be less likely to select the strike route during the Liberal majority than the Liberal minority regime. Similarly, we expect a negative sign for CMN, because the conservative or right-of-centre minority government will be more willing to take a strike than a left-of-centre (Liberal) minority government.

The last set of variables affecting route choice deal with workers' taste for a strike. Among occupations there have been historical differences in the acceptance of unions, collective bargaining and the legitimacy of strikes as an negotiating weapon. The conventional wisdom is that professional employees feel greater unease with the confrontational industrial relations system while blue collar workers feel most at home with the strike right. The federal government divides its 200,000 employees into five broad occupational categories: scientific and professional, administrative and foreign service, technical, administrative support, and operational. Though the scientific and professional category best fits the paradigm of professional employees, both the administrative and foreign service category (denoted by AF), and the technical category (TC) involve highly skilled white collar jobs. The administrative support occupations (AS) are semi-skilled white collar jobs generally populated by female employees, while the operational category (OP) represents the traditional male-dominated blue collar jobs. Dummy variables for each of these categories, except the scientific and professional category (the reference group), will be included. Presumably unions representing operational employees would be most likely to strike.

To summarize, the explanatory variables appearing in the probit route choice equation are:

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6 Determination of designation levels for the entire sample required some approximation. Groups which had gone through the designation process sometime in the period are assigned to that specific designation category, for the entire period. Those occupational groups which used arbitration throughout the period are assigned to designation categories based on a comparison with similar groups and/or designation decisions following the sample period. A listing of all group designation categorizations is available from the authors.

$(\dot{W}_{si} - \dot{W}_{ai})$ = annualized percentage wage increase under the strike route minus annualized percentage wage increase under arbitration,

DL_i = 1 if expected designations are less than ⅓; 0 otherwise,

DH_i = 1 if expected designations are greater than ⅔; 0 otherwise,

LMJ_i = 1 if contract settled during the liberal majority government; 0 otherwise,

CMN_i = 1 if the contract settled during the conservative minority government; 0 otherwise,

AF_i, TC_i, AS_i, OP_i = dichotomous variables for whether the union came from the administrative and foreign service, technical, administrative support or operational categories respectively.

WAGE DETERMINATION

The two wage determination equations, one for each bargaining route, are based on the models by Auld, Cristofides, Swidinsky and Wilton (1979), with additional variables included to capture political and strategic factors particular to the federal public service. Negotiated wage increases are related to excess demand in labour markets, expected inflation over the life of the contract and catch up for unanticipated inflation during the previous contract. The national help wanted index lagged one quarter (HW) is used to measure excess demand in the labour market and should be positively related to wage increases.[7] Expected inflation rates (PE) over the life of current and previous labour contracts are estimated using an autoregressive model which is constantly revised as new information on actual inflation rates becomes available.[8] The catch up variable (PC) is then determined by subtracting the expected inflation rate during the previous contract from the actual inflation

7 Reid and Meltz (1979) indicated that the vacancy rate is a more consistent measure of labour market conditions over time than the unemployment rate. Auld *et al.* (1979:198) stated that the Help-Wanted Index and/or the Job Vacancy Rate were superior on empirical grounds to the unemployment rate in their wage determination models. Preliminary regression estimates for these data confirmed the empirical superiority of the Help Wanted Index.

8 The data underlying the forecasts are year over year rates of inflation on a seasonally adjusted, quarterly basis. An autoregressive model employing five lags was fitted using least squares to this data from 1964.2 to 1986.4, using an 'add one quarter, drop one quarter' strategy to form a large set of autoregressive models. This procedure is similar to that employed by Riddell and Smith (1982:380). Five lags appear to be sufficient to capture all significant lagged rates of inflation in these moving regressions. To allow for a possible effect of the AIB on inflation expectations, a dummy variable reflecting the existence of the control program was added to all those regressions with observations falling in the period 1975.4 to 1978.3.

over the life of the previous contract. Both variables should be positively associated with negotiated wage increases.

Other variables are included to capture the influence of political and bargaining process factors in determining public sector wage settlements. As with the route choice equation, a pair of dichotomous variables identify the periods of Liberal majority (LMJ) and Conservative minority (CMN) government (the Liberal minority government is the reference group). For groups negotiating under the strike route, the dichotomous variables for high and low designation rates (DH, DL) are also included. Assuming unions are unwilling to break the law, groups with relatively high or low proportions of employees designated as essential would be unable to launch an effective strike and therefore should have less bargaining power than the reference group. The signs of DH and DL ought to be negative.

There is no consensus in previous empirical studies about the impact of stage of settlement on federal public sector wage increases.[9] Bargaining impasses can occur for many reasons. If a conciliation board report under the strike route is like one-way arbitration (binding only on management), then negotiations settled after such a board report might be higher, *ceteris paribus.* Initiating a strike (or taking a strike) is an investment whose returns are not necessarily reflected solely in the current settlement. In addition, impasses under either bargaining route can be viewed as a way the parties generate information either about the degree of damage a work stoppage will impose on the parties, or the way arbitrators make decisions, rather than as a way to directly generate favourable wage outcomes. Despite the difficulty in predicting the effect of impasses, dummy variables for the appropriate impasse have been included in each wage determination equation.

Summarizing, the two wage equations for each bargaining situation i are:

$$\dot{W}_{si} = g\,(PE_i,\ PC_i,\ HW_i,\ LMJ_i,\ CMN_i,\ DL_i,\ DH_i,\ CB_i,\ ST_i) + u_{1i} \quad (2)$$

$$\dot{W}_{ai} = h\,(PE_i,\ PC_i,\ HW_i,\ LMJ_i,\ CMN_i,\ AR_i) + u_{2i} \quad (3)$$

where g and h are linear functions, u_i is an error term (discussed below), and:

$\dot{W}_{si}$ = annualized percentage wage increase under the strike route,

$\dot{W}_{ai}$ = annualized percentage wage increase under the arbitration route,

PE_i = expected annual inflation over the contract life,

9 Saunders (1985) found that arbitration awards were significantly higher than those negotiated without an impasse. However, Anderson (1981) and Swimmer (1987) found no significant relationship between impasses and wage increases using ordinary least square regression techniques.

PC_i = catch up for unanticipated inflation over the previous contract,

HW_i = national help wanted index lagged one quarter,

DL_i, DH_i = dichotomous variables for bargaining units with low and high designation rates, respectively,

CMN_i, LMJ_i = dichotomous variables for contracts settled during the conservative minority and liberal majority governments respectively,

CB_i = 1 if settlement reached after a conciliation board report; 0 otherwise,

ST_i = 1 if settlement reached after a strike; 0 otherwise, and

AR_i = 1 if dispute was resolved by an arbitration award; 0 otherwise.

ESTIMATION, DATA AND RESULTS

Equations (2) and (3) cannot be estimated by ordinary least squares because $E(u_1 \mid I = 1) = E(u_1 \mid e_i > -x'_i\beta) \neq 0$. Similarly, for the bargaining units on the arbitration route, $E(u_2 \mid I = 0) \neq 0$. In other words, we do not observe what wages would be under arbitration for those on the strike route, and vice-versa, and this fact must be acknowledged in choosing an estimator for the wage equations. The term 'selectivity bias' is often used to refer to the fact that estimating equations (2) and (3) by ordinary least squares yields biased and inconsistent estimates of the parameters because the error terms do not have zero means.

The model (1) - (3) can be consistently estimated using the Heckman-Lee procedure (see Maddala 1983: Chapter 8). The choice equation (1) includes endogenous variables ($\dot{W}_s$, $\dot{W}_a$) so equations (2) and (3) are first substituted into (1) to yield a reduced form probit equation. The probit reduced form results are then used to estimate the conditional means of the u_i in (2) and (3), which are then added as explanatory variables, making it possible to estimate the two wage equations consistently. Predictions of $\dot{W}_{si}$ and $\dot{W}_{ai}$ based on the estimated wage equations can then be substituted for actual wages in (1), permitting estimation of the structural choice of route equation.

The data set contains all collective agreements negotiated between January 1, 1971 and June 28, 1982 (the announcement of the "6 and 5" wage control program). There are several reasons for stopping in mid-1982. The "6 and 5" program extended all contracts for two years, without the possibility of collective bargaining over wages. Once the control program ended, the full impact of the 1975 Supreme Court decision concerning air traffic controllers, which gave management the unilateral right to designate employees as essential, became apparent (see Subarrao 1985, and Swimmer 1987a). The extent of

designated employees jumped from about 15 percent to 40 percent, greatly reducing the viability of a strike threat. After 1985, the two major federal unions (Public Service Alliance of Canada and the Professional Institute of the Public Service) began systems of joint bargaining with the employer. Two master agreement contracts (one for each union) generated virtually identical wage increases for approximately 60 bargaining units in the 1985 and 1988 bargaining rounds. The two Professional Institute agreements were negotiated under a regime of "binding conciliation" for wages which is really another form of arbitration, although it occurs under the conciliation-strike route.

Even with the June 1982 end date, there are almost 500 contracts to analyze. Unfortunately, another wage control program (the Anti-Inflation Program) occurred between October 1975 and October 1978. Collectively bargained wage increases could be rolled back by the Anti-Inflation Board (AIB). As a result, the actual wage increase was often lower than the increase negotiated by the parties. From earlier analyses, it was clear that contracts settled during the AIB regime were significantly different in structure from the others.[10] The AIB observations are therefore deleted from the samples leaving 306 observations, of which 207 are arbitration route cases. To the extent that the AIB disrupted internal wage relativities (some contracts were signed before the program was imposed), wage increases in the post-AIB period may reflect an attempt to rectify the situation. An additional dichotomous variable is included (TP1) to capture whether the contract comes from the 1971-75 period or the 1978-1982 period.

THE RESULTS

Tables 1 and 3 summarize results for the wage determination and route choice equations, respectively. Table 2 reports estimated wages under the two alternative routes.

We begin with a discussion of the wage equations under strike and arbitration routes. The coefficient on the 'self-selection' term (reflecting the non-zero means in equations (2) and (3)) is large is both equations, although it misses significance for the strike route. This indicates that ordinary least squares would have yielded inconsistent wage increase estimates.

Only wage settlements under the strike route are affected by general labour market conditions, as measured by the help wanted index. This is

10 The wage determination model was estimated for the strike and arbitration routes on a pooled basis and with separate regressions for AIB and non-AIB cases. The resulting F tests for both equations were significant at better than the one percent level (for strike $F_{9,151} = 5.16$; for arbitration $F_{6,317} = 8.03$). These results are available from the authors.

consistent with the Auld *et al.* (1981) finding that strike-based public sector wage determination is as responsive to labour demand as the private sector, but that arbitration-based bargaining is not. Expected future inflation and catch up for past inflation are directly related to wage increases for both routes, but are more important in arbitration. Wage increases negotiated under the arbitration regime compensate for about a third of unanticipated inflation over the previous contract and one-fifth of expected future inflation. Under the strike route, catch up only amounts to one-quarter of wages lost to unanticipated inflation and expected future inflation does not significantly affect wage increases.

Political factors are also important in wage determination. *Ceteris paribus*, all wage increases (regardless of the route) were approximately 1.3 percentage points lower under the Liberal majority government than the Liberal minority. The Conservatives apparently clamped down even harder on wages, despite their minority status, with wage increases being 4 percentage points below the Liberal minority (or 2.7 percentage points below the Liberal majority).

For strike based negotiations, the extent of designations (as essential) has an impact on the final outcome. Groups with low designation rates receive wage increases 1 percentage below groups with medium designation levels (the reference group). This is not surprising because these units cannot deliver a politically costly strike against management. Groups with high designations appear to perform better than the reference group, though the result misses significance. Perhaps they can generate a credible illegal strike threat to the Treasury Board.

Neither variable measuring the stage of settlement under the strike route reaches statistical significance.[11] By contrast, settlements obtained as a result of an arbitration award were 1.4 percentage points higher than other contracts settled by parties themselves under arbitration, *ceteris paribus*.[12] This finding may stem from the fact that the scope of an arbitrator's award is narrower than the scope of bargaining (see Anderson 1981). It is possible that in bargaining some union groups accepted smaller wage increases in return for the Treasury Board making concessions on issues which would not be part of an arbitration award.

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11 If anything, the results suggest that contracts settled after a conciliation board are lower than those settled earlier in the process. This negative influence appears to cancel out most of the positive influence of settling after a strike (no legal strike can occur until a conciliation board report is issued). It should be noted that among the 99 conciliation-strike route cases, 32 were settled after a conciliation board report and 11 following a strike.

12 Among the 207 arbitration route cases, 92 (44 percent) were settled by an arbitrator's award.

TABLE 1

Regression Estimates of Wage Increases ($\dot{W}$) Under the Strike and Arbitration Routes

Independant Variables	*Conciliation-Strike Route*	*Arbitration Route*
Expected Inflation (PE)	.127	.218
	(1.26)	(3.33)***
Catch Up (PC)	.246	.319
	(1.70)*	(3.08)***
Help Wanted Index (HW)	.074	.006
	(3.14)***	(.39)
Liberal Majority (LMJ)	-1.296	-1.353
	(-1.44)	(2.65)***
Conservative Minority (CMN)	-4.247	-4.070
	(-3.52)***	(5.45)***
High Designation Rates (DH)	1.283	—
	(1.41)	
Low Designation Rates (DL)	-1.152	—
	(-2.07)***	
Conciliation Board Report (CB)	-.776	—
	(-.65)	
Strike (ST)	1.209	—
	(1.40)	
Arbitration Award (AR)	—	1.398
		(2.66)***
Self-Selection	-1.454	-2.121
	(-1.49)	(-2.75)***
1975-78 Time Period (TP1)	.411	-.620
	(.42)	(-1.13)
Constant	5.745	6.932
	(3.30)***	(4.35)***
ADJ.R^2	.440	.336
N	99	207

t value in parenthesis
* Significant for a two tail test at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

It is possible to predict the wage increase which each union group would have received, had they chosen the opposite route (see Table 2), by substituting the attributes of each group into the estimated wage equations for the route not selected. The results demonstrate that, from a union perspective, the conciliation-strike route is clearly the superior dispute resolution process. Regardless of which regime the union group actually selected, the average predicted wage increase in the strike route exceeds the average prediction under the arbitration route by three percentage points. Those currently using the

strike route would have seen the average increase drop from 11.2 percent to 8 percent had they all used arbitration, and those units using arbitration could have raised their average wage increase from 9.5 to 12.6 percent by switching to the conciliation route.[13] Thus, while unions on the strike route are maximizing their wages, groups selecting arbitration would generally do better under the strike route. Whether this difference in wages has affected the route choice is determined by the arbitration v. strike choice equation.

TABLE 2

Average Predicted Wage Increases Under the Strike and Arbitration Routes

Predicted Wage Increase	*Actual Route Chosen*	
	Conciliation Strike	*Arbitration*
Conciliation - Strike	11.16%[1]	12.60%[2]
Arbitration	8.01%[2]	9.54%[1]
Difference	3.15%[3]	3.06%[3]

[1] Mean of predicted wage increases on actual route selected

[2] Mean of predicted wage increases on route not selected, assuming the same proportion of units settle at various stages: .32 are settled after a conciliation board report and .11 after a strike (C.S. route); .44 of contracts are determined by an arbitration award (Arb. Route)

[3] Difference between wage increases for strike and arbitration routes is significant at the 1% level

Table 3 presents the reduced form and structural probit equations for the choice of dispute resolution route. Our discussion focuses on the structural equation in column two. The most important finding is that choice of the strike route is strongly related to the difference in wage increases that would have been experienced by each bargaining unit under the two routes. As the wage advantage of the strike route increases by 1 percentage point, the probability of selecting the strike route is predicted to increase by .176 (at the average values of explanatory variables).[14]

13 Even the ordinary least squares results demonstrate the superiority of strike route, albeit to a lesser extent. For groups on the strike route, the difference is about 1.4 percentage points (11.2 v. 9.8), while for those actually using arbitration, it is 1.6 percentage points (11.2 v. 9.5). The regression results are available from the authors.

14 The increase in the probability of a strike is given by $\hat{\beta} f(x'\hat{\beta})$ where $\hat{\beta}$ is the estimated coefficient on the wage differential and f(.) is the standard unit normal.

TABLE 3

Probit Regression Estimates of the Route Choice Equation (Route – 1 for strike; 0 for Arbitration)

Independent Variables	*Reduced Form Equation*	*Structural Equation*
Wage increase under strike less wage increase under arbitration ($\dot{W}_s$-$\dot{W}_a$)	—	.544 (6.03)***
Low designation rate (DL)	-.394 (-.167)*	.366 (1.60)
High designation rate (DH)	-.819 (-2.35)**	-1.516 (-5.09)***
Liberal majority (LMJ)	.084 (.23)	.283 (1.06)
Conservative minority (CMN)	-.487 (-.92)	-.119 (-.30)
Administration and foreign service (AF)	-.378 (-.84)	-.713 (-2.02)**
Technical (TC)	.326 (1.08)	.438 (1.78)*
Administrative support (AS)	.212 (.49)	.150 (.44)
Operational (OP)	.708 (2.58)***	1.113 (5.08)***
1975-78 time period (TP1)	-1.337 (-3.93)***	-.775 (-3.48)***
Expected inflation (PE)	.047 (.90)	—
Catchup (PC)	.104 (1.51)	—
Help Wanted Index (HW)	-.027 (-2.69)***	—
Conciliation board report (CB)	6.82 (.01)	—
Strike (ST)	5.216 (.00)	—
Arbitration award (AR)	-6.133 (-.02)	—
Constant	1.946 (2.24)**	-2.490 (-5.22)***
χ^2(df)	194.89(15)	99.00(10)
N	306	306

t value in parenthesis
* Significant for a two-tail test at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Expected designations under the strike route affect the choice, although not exactly as predicted. Bargaining units expecting high designation rates are significantly less likely to choose the strike route than other units. Groups with fewest designations were actually more likely to select the strike option than those with medium designation rates (the reference group), although the result just misses statistical significance.

Political considerations did not appear to affect the choice calculus. Unions were no more likely to select the strike route during any of the three political regimes. The type of government could effect the choice indirectly by having a differential effect on wages negotiated under the strike and arbitration routes (changing $\hat{W}_s - \hat{W}_a$) However, the results from the wage equations rule out this possibility because the size of the coefficients for conservative minority and liberal majority regimes are virtually identical for the strike and arbitration routes.

Occupational categories exhibit preferences for arbitration or strike along the lines generally expected. Operational (blue collar) and technical bargaining units are significantly more likely to select the strike route, while administrative and foreign service employees are more likely to select arbitration, than professional employees (the reference group). Finally, groups were more likely to select conciliation strike in the post-AIB period (1978-1982), than in the 1971-75 period, other things equal. This result undoubtedly reflects other dissatisfactions with arbitration such as its narrow scope with respect to non-wage issues.

CONCLUDING REMARKS

Given the superiority of the strike route throughout the period and the importance of wage outcomes in determining the route choice, it is not surprising that between 1983 and the present, unions abandoned arbitration. Only 14 bargaining units representing about 15,000 employees (8 percent of the total) remained on the arbitration route as of March 1990. At the same time, since strike route wage settlements have been substantially higher than those under arbitration, the employer has had a financial incentive to reduce the attractiveness of the strike route. As mentioned previously, in 1982 the Treasury Board challenged the power of the Public Service Staff Relations Board to adjudicate disputes over the employees who would be designated to work during a strike. The Supreme Court decision in the case greatly enhanced the employer's unilateral power to determine the designation list. Subsequently designations jumped dramatically to the point where 27 of the 48 bargaining units which went through the designation process had more than 60 percent of members who would be required to work during a legal strike (Swimmer 1987b: 301).

Although these unions could still technically strike, the political cost imposed on management of such work stoppages would be limited by the high level of designations. It is not possible to say at this point whether the wage advantage of the strike route illustrated in Table 2 will disappear, as insufficient data from the new environment are available. Nonetheless, early indications are consistent with this view. Bargaining units which selected the conciliation-strike route between 1985 and 1990 received average annual wage increases of 3.88% compared to annual increases of 3.84% for groups selecting arbitration.[15]

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15 These averages are based on data supplied by the Pay Research Bureau. It was assumed that groups bargaining under a regime of "binding conciliation" for wages were still negotiating under the conciliation-strike route, although "binding conciliation" is really arbitration. If those groups are moved to the arbitration rate, the average for conciliation-strike would be 3.91% compared to 3.82% for "arbitration".

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Le choix du mode de règlement des différends dans le secteur public fédéral

Depuis 1967, les syndicats de la fonction publique fédérale canadienne ont pu choisir unilatéralement le mécanisme par lequel l'impasse dans la négociation allait se résoudre. Dans cet article, le choix de recourir à la grève ou à l'arbitrage pour mettre fin au conflit repose à la fois sur la détermination salariale pour les services gouvernementaux fédéraux et sur la méthodologie des choix autonomes. Ce modèle permet l'étude des facteurs influençant la préférence pour l'un ou l'autre des deux modes de résolution ainsi que l'impact de celui-ci sur les augmentations de salaires.

La première partie du modèle porte sur la probabilité pour la partie syndicale d'opter pour la grève. Les auteurs avancent comme théorie que plus l'écart entre les augmentations salariales anticipées par un arrêt de travail et celles anticipées par l'arbitrage est important, plus la probabilité que le syndicat opte pour la grève sera élevée. Les autres facteurs pris en compte sont la proportion de travailleurs essentiels dans l'unité d'accréditation (ceux ne pouvant participer légalement à un arrêt de travail), l'environnement politique ainsi que les préférences quant aux moyens de pression.

Deux équations de détermination salariale, l'une pour la grève et l'autre pour l'arbitrage, ont été dès lors développées. Comme pour d'autres recherches, les augmentations salariales sont présumées être reliées directement à l'inflation anticipée, au rattrapage de l'inflation non anticipée ainsi qu'à l'offre et à la demande de travail. D'autres variables ont été ajoutées pour mesurer l'influence des aspects politiques du processus de négociation et ceux rattachés à chacune des deux options.

Les équations salariales ne peuvent reposer sur de simples Khi carrés de par la présence du biais des choix autonomes. Pour y remédier, plus de 300 conventions collectives signées entre 1971 et 1982 ont toutes été analysées avec la technique développée par Heckman et Lee. Une fois les équations calculées, il est possible de prédire l'augmentation salariale que chaque syndicat aurait reçue advenant qu'il ait opté plutôt pour l'autre option. D'une perspective syndicale, les résultats démontrent que la voie de la grève est meilleure. Indépendamment du mode choisi, l'augmentation salariale moyenne prédite par une grève surpasse celle prédite par l'arbitrage de 3 %.

Des évaluations faites pour l'équation de grève à partir de l'équation structurelle, il ressort que pour chaque point de pourcentage d'augmentation des salaires gagné par l'option de la grève, la probabilité que ce mode soit préféré à l'arbitrage augmente de 0,176.

Étant donné la préférence marquée pour la grève et l'importance de la question salariale dans le choix d'un mécanisme de règlement, il n'est pas surprenant de constater que, depuis 1983, les syndicats aient laissé de côté l'arbitrage. Seulement 14 unités d'accréditation comptant 15 000 employés (8 % du total) avaient opté pour l'arbitrage en date du mois de mars 1990.